

THE MINERAL INDUSTRY OF NORTH KOREA

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North Korea (the Democratic People's Republic of Korea) borders the eastern Chinese Provinces of Jilin and Liaoning and the Republic of Korea. During the past couple of years, North Korea emerged from its state of isolation by opening up its industrial sectors to foreign investment. On July 1, 2002, the Government introduced an economic reform program that would phase out the Government's food-rationing system; establish free markets in major cities; designate Gaesong, Mt. Genumgang, and Shinuiju as special economic zones; and send groups abroad to learn about market economies. The Government also planned to reorganize several administrative areas, or "Teukgeupsi," to attract foreign investors. The Government intended to designate Nampo and Wonsan as additional processing trade zones in 2004, which would allow foreign investors to establish facilities in these zones. The Nampo area was one of several well-developed industrial areas in North Korea; it is one of the inter-Korean connection points and had the potential to be a commercial base in Northeast Asia. Nampo Port, which was the largest port in North Korea, accounted for 28.9% of the country's total trade; it had a loading and unloading capacity of 7.5 million metric tons (Mt) and a berthing capacity of 25,000 metric tons (t) (Ministry of Unification, 2004a§¹).

North Korea is rich in mineral deposits of copper, gold, graphite, iron, lead, magnesite, tungsten, and zinc. With the end of the Cold War, North Korea had lost a large amount of aid from China and the former Soviet Union and faced shortages of electricity, food, and raw materials. Much of the equipment in use was in need of spare parts, and, owing to a lack of electricity, many machines were either operated manually or shut down. As a result, minerals production declined sharply. During the past several years, the Government allowed foreign investors to participate in selected projects. Factory-worker productivity improved and exports to China and Southeast Asia increased. The Government planned to continue its effort to consolidate heavy industries and develop light industries (Washington Post, The, 2004).

In 2003, the economy of North Korea continued to grow steadily for the fifth consecutive year. This growth was reflected in the gross domestic product, which increased by 1.8%. All sectors recorded an increase of growth. Power, mining, and construction grew by 4.2%, 3.2%, and 2.1%, respectively. In 2003, trade totaled \$2.39 billion; of that amount, \$1.61 billion was for imports and \$780 million was for exports. China remained North Korea's leading trading partner at a value of \$1.02 billion. The reported value of inter-Korean trade, which was excluded from the reported figure for total trade, grew by 12.9% to \$724 million. Owing to expanded food loans and humanitarian aid, exports to North Korea from the Republic of Korea increased by 17.5% to \$435 million; of these exports, chemical and agricultural products were the major commodities. The Government planned to achieve economic growth by expanding trade and cooperation with international organizations and by increasing spending on science and technology by 60% in 2004 (Bank of Korea, 2004; Ministry of Unification, 2004b§).

North Korea has significant resources of iron ore, which are located at Chaeyong, Hason, Komdok, Musan, Sehaeri, Songhung, Tokhyon, Tokonsong, Toksong, and Unryul. The leading iron ore mine was at Musan and had a designed output capacity of 10 million metric tons per year (Mt/yr) of ore and concentrates. These materials were transported via pipeline to the Kim Chaek steel plant, which had an output capacity of 4 Mt/yr. Owing to a lack of funds to modernize the Kim Chaek Mine, processing plant, and steel plant, all operated below their output capacities.

The three magnesite mines (Dae Hung, Paek Bai, and Ryong Yang) had a total output capacity of 2.5 Mt/yr. The opencast Dae Hung Mine is located from 1,030 to 1,530 meters above sea level in a mountainous region at the northern part of South Hamgyong Province. The mine, which was developed in 1978, had a design capacity of 1.3 Mt/yr of ore. An underground mine, Ryong Yang, is located at the southern part of the Dae Hung Mine in the South Hamgyong Province; it had an output capacity of 1 Mt/yr. Another underground mine, Paek Bai, is located at the coastal area of Yanggang Province; it had an output capacity of 0.2 Mt/yr. Ores were transported via railway and road to plants at Dae Hung, Song Jin, and Tanchon. The processed ore, which had magnesium oxide content of about 46%, was exported to China. The Dae Hung Mine also produced chlorite and talc (Muk, Coplet, Wu, and Wilson, 2003).

Two state-owned companies, Korea Resources Corp. (KRC) of the Republic of Korea and Samchelli Corp. of North Korea, planned to form a joint venture to mine graphite at Yongho, North Korea. KRC will provide equipment and machinery to develop the mine and will export about 10,000 metric tons per year (t/yr) of graphite to the Republic of Korea (Mining Journal, 2003).

Monazite was produced through International Chemical Joint Venture Corp., which was a joint venture between state-owned Korea Ryongaksan General Trading Co. and a Japanese company. The mine is located at Chelsan, near the Chinese border, and had estimated resources of 500,000 t. The company operated a processing plant that had a design output capacity of 1,500 t/yr (Mining Journal, 2003).

In 2002, the total power generation capacity of North Korea was 7,770 megawatts; 70% of the power-generating facilities, however, were either abandoned or required parts to repair. In 2002, the total amount of power generated was 19.0 billion kilowatthours. Of North Korea's 24,449 kilometers (km) of roads, only 12% was paved; a majority of the roads had fewer than two lanes. The public railway system consisted of 5,235 km of track, of which 80% was electrified. Owing to power shortages, railway operation was suspended frequently. North Korea's ports had a total loading and unloading capacity of 35.5 Mt (Ministry of Unification, 2003§).

¹ References that include a section mark (§) are found in the Internet References Cited section.

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TABLE 1
NORTH KOREA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES ^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	1999	2000	2001	2002	2003
METALS					
Cadmium metal, smelter	100	100	100	100	100
Copper:					
Mine output, Cu content	14,000	13,000	13,000	13,000	13,000
Metal:					
Smelter, primary and secondary	15,000	13,000	13,000	13,000	13,000
Refinery, primary and secondary	16,000	14,000	14,000	14,000	14,000
Gold, mine output, Au content kilograms	2,500	2,000	2,000	2,000	2,000
Iron and steel:					
Iron ore and concentrate, marketable:					
Gross weight thousand tons	3,800	3,800	4,200	4,100	4,430
Fe content do.	1,100	1,100	1,200	1,150	1,260
Metal:					
Pig iron do.	800	800	800	800	900
Ferroalloys, unspecified do.	10	10	10	10	10
Steel, crude do.	1,000	1,000	1,000	1,030 ^r	1,090
Lead:					
Mine output, Pb content	60,000	60,000	60,000	60,000	60,000
Metal:					
Smelter, primary and secondary	60,000	60,000	60,000	60,000	60,000
Refinery, primary and secondary	75,000	75,000	75,000	75,000	75,000
Silver, mine output, Ag content	40	40	40	40	40
Tungsten, mine output, W content	500	500	500	600	600
Zinc:					
Mine output, Zn content	100,000	100,000	100,000	100,000	100,000
Metal, primary and secondary	100,000	100,000	100,000	100,000	100,000
INDUSTRIAL MINERALS					
Barite	70,000	70,000	70,000	70,000	70,000
Cement, hydraulic thousand tons	4,000	4,600	5,160	5,320	5,540
Fluorspar	25,000	25,000	25,000	25,000	25,000
Graphite	33,000	30,000	25,000	25,000	25,000
Magnesite, crude thousand tons	1,000	1,000	1,000	1,000	1,000
Nitrogen, N content of ammonia do.	100	100	100	100	100
Phosphate rock	350,000	350,000	350,000	300,000	300,000
Salt, all types	500,000	500,000	500,000	500,000	500,000
Sulfur thousand tons	41	41	41	42	42
Talc, soapstone, pyrophyllite	120,000	120,000	120,000	110,000	110,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite thousand tons	15,000	16,000	16,000	17,000	16,000
Lignite do.	5,500	6,500	7,000	7,000	6,300
Total do.	20,500	22,500	23,000	24,000	22,300
Coke do.	2,000	2,000	2,000	2,000	2,000

^rRevised.

¹Table includes data available through July 25, 2004.

²Estimated data are rounded to no more than three significant digits; may not add to totals shown.

³In addition to the commodities listed, crude construction materials, such as sand and gravel and other varieties of stone, and petroleum products presumably are produced, but available information is inadequate to make reliable estimates of output levels.